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U.S. Department of Transportation
Urban Mass Transportation Administration

National Ridesharing Demonstration Program: Home-End Ridesharing in Lincoln, NE

UMTA/TSC Evaluation Series

Final Report
April 1985

UMTA Technical Assistance Program

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16. Abstract

Between May 1980 and July 1982, the City of Lincoln, Nebraska conducted a Home-End Ridesharing Demonstration Project to assist residents of three neighborhoods to travel by means other than single-occupancy vehicles. This report presents the findings of the evaluation of the project. The critical issues examined in the evaluation are whether the demonstration project assisted people in finding alternative means of travel and whether, as a result of the demonstration, residents made more of their trips by alternative means. Another important idea tested in Lincoln was whether personal attention had any impact on changing people's methods of travel.

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PREFACE

This report has been prepared for the Transportation Systems Center (TSC) by John Sindzinski of Crain & Associates, Inc. Guillaume Shearin was responsible for all evaluation activities prior to report preparation. David Koffman provided final editing and technical quality control. Lawrence Doxsey and Joel Freilich have acted as TSC evaluation managers for the project.

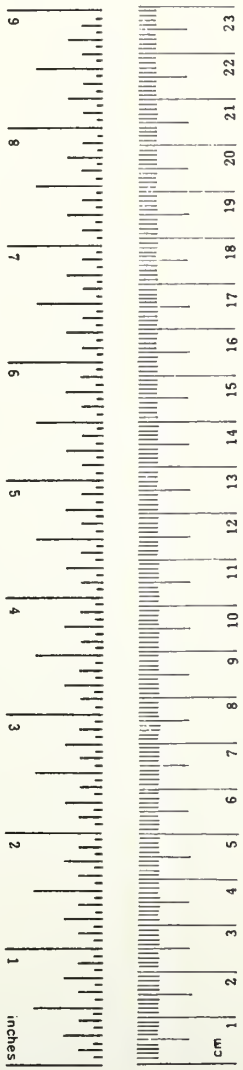
The contractor wishes to thank Shirley Maly and Linda Stringham of the project for their cooperation and participation in the data collection and evaluation process.

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

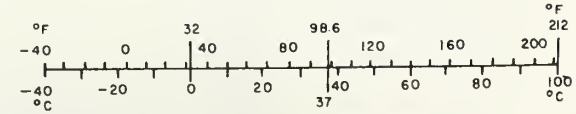
Symbol	When You Know	Multiply by	To Find	Symbol
	LENGTH			
in	inches	*2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
	AREA			
in^2	square inches	6.5	square centimeters	cm^2
ft^2	squere feet	0.09	square meters	m^2
yd^2	square yerds	0.8	square meters	m^2
mi^2	squere miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
	MASS (weight)			
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
	VOLUME			
tsp	teespoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gel	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
	TEMPERATURE (exact)			
°F	Fahrenheit tempereture	5/9 (after subtrecting 32)	Celsius tempereture	°C

*1 in = 2.54 (exactly). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures, Price $2.25, SD Catalog No. C13.10:286.



Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
	LENGTH			
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
	AREA			
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.5	ecres	
	MASS (weight)			
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
	VOLUME			
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
	TEMPERATURE (exact)			
°C	Celsius tempereture	9/5 (then add 32)	Fahrenheit temperature	°F



CONTENTS

Section			Page
1.0	INTRODUCTION		1
	1.1	Overview	1
	1.2	Lincoln's Ridesharing Program	1
	1.3	The Home-End Ridesharing Demonstration Project	2
	1.4	Evaluation Issues and Research Design	3
	1.5	Organization of Report	3
2.0	DEMONSTRATION SETTING		5
	2.1	Geography, Population, Employment Characteristics	5
	2.2	Transportation Characteristics	5
	2.3	Project Neighborhood Characteristics	8
	2.4	Lincoln Ridesharing Program	11
		2.4.1 History	11
		2.4.2 Program Organization	12
		2.4.3 Lincoln Carpool/Vanpool Program Results	13
		2.4.4 Ridesharing Promotional Campaigns	14
3.0	PROJECT DESCRIPTION AND IMPLEMENTATION		15
	3.1	Project Objectives	15
	3.2	Relationship to Lincoln Carpool/Vanpool Program	16
	3.3	Project Management, Organization and Staffing	16
	3.4	Project Budget	21
		3.4.1 Actual Budget	21
4.0	PROJECT EVALUATION		23
	4.1	Project Objectives, Market and Clients	23
	4.2	Research Design and Evaluation Issues	23
	4.3	Data Collection Methodology	24
	4.4	Evaluation of Project Effectiveness	27
		4.4.1 Assistance by Project Neighborhood	27
		4.4.2 Mode Split by Project Neighborhood	28
		4.4.3 Assistance by Degree of Personalization	30
		4.4.4 Mode Split by Degree of Personalization	32

CONTENTS (Continued)

Section			Page
	4.4.5	Mode Split by Assistance and Neighborhood	33
	4.4.6	Pre- and Post-Project Carpool Mode Splits	35
4.5		Project Effectiveness	36
5.0		SUMMARY AND TRANSFERABLE IMPLICATIONS	37
5.1		Conclusions of Program Effectiveness Evaluation	37
5.2		Transferable Implications	39
APPENDIX A		Canvassing and Evaluation Surveys	A-1

LIST OF ILLUSTRATIONS

Figure		
2-1	LINCOLN EMPLOYMENT CONCENTRATIONS	7
2-2	DEMONSTRATION PROJECT NEIGHBORHOODS	9
3-1	TRAVEL ACTION PLAN GOALS & PERFORMANCE MEASURES	17
3-2	ORGANIZATION CHART	20

LIST OF TABLES

Table		
2-1	LINCOLN AREA HOME-WORK COMMUTE BY MODE, 1980	6
2-2	PRE-DEMONSTRATION NEIGHBORHOOD PROFILE	11
4-1	SURVEY SAMPLE GROUPS	25
4-2	RESPONDENTS INDICATING HELP FROM RIDESHARING SERVICES	27
4-3	CARPOOL AND ALTERNATIVE MODE TRAVEL BY TRIP PURPOSE	29
4-4	ALTERNATIVE MODE USE BY NEIGHBORHOOD FOR ALL TRIP PURPOSES COMBINED	30
4-5	CARPOOL AND ALTERNATIVE MODE SPLITS FOR ALL TRIPS BY NEIGHBORHOOD AND ASSISTANCE	34
4-6	PRE- AND POST-PROJECT CARPOOL MODE SPLITS BY NEIGHBORHOOD	36

EXECUTIVE SUMMARY

Between May 1980 and July 1982, the City of Lincoln, Nebraska, conducted the Home-End Ridesharing Demonstration Project. The objective of the project was to assist residents of three neighborhoods to travel by means other than single-occupancy vehicle. Techniques used in the project included a canvass of residents by neighborhood ridesharing agents, a matching effort focused on school trips, and a special Christmas holiday shopper shuttle bus.

The Lincoln project was one of 65 funded between 1979 and 1982 under the National Ridesharing Demonstration Program (NRDP). The NRDP was sponsored jointly by the Federal Highway Administration (FHWA), the Urban Mass Transportation Administration (UMTA), and the Office of the Secretary of Transportation. The evaluation, one of seventeen funded by UMTA's Service and Methods Demonstration Program, was carried out by Crain and Associates, Inc., under contract to the Transportation Systems Center, a research and development organization within the U.S. Department of Transportation.

This report presents the findings of the evaluation of the project. The critical issues examined in the evaluation are whether the demonstration project assisted people in finding alternative means of travel and whether, as a result of the demonstration, residents made more of their trips by alternative means.

The evaluation found that the demonstration had mixed results. Carpooling and alternate mode use was found to be about the same in the demonstration neighborhoods (51%) as in the rest of Lincoln (50%). However, carpooling for work trips in Bethany and Colonial Hills was found to have increased between the time the project started and finished. For example, 22% of the journey-to-work trips in Colonial Hills

were made by carpool before the project was conducted. Afterwards 26% of work trips were by carpool. It is not known, however, if this increase was directly attributable to the project or whether other exogenous factors contributed to the change.

The evaluation also looked at whether people said the project influenced them to make more of their trips by carpooling, riding the bus, bicycling, or walking. It was found that the proportion of respondents in the test areas who said so was equal to that in the control area, the rest of Lincoln. Further, it is not known whether this perception of being influenced actually caused any changes in travel behavior or alternative mode use.

One evaluation issue of the project was whether alternative mode use would vary between different neighborhoods with different travel needs and socio-economic characteristics. It was found that this was the case. Carpooling and alternate mode use varied from 45.9% in Bethany to 63.9% in Colonial Hills. The proportion of alternate mode use in the control group respondents was found to be 50.3%.

The evaluation concludes that this variation is probably due to factors unique to each neighborhood. For instance, residents of the Colonial Hills neighborhood had expressed a much greater degree of concern and awareness about travel because the community is relatively isolated. In only one neighborhood (Colonial Hills) was alternate mode use found to be statistically significantly greater than that of the control group.

An important idea tested in Lincoln was whether personal attention had any impact on changing people's method of travel. While this was not found to be the case in Lincoln, the evaluation argues that the efficacy of the intervention was not fully tested and hence, personalized services should not be regarded as a failure. The evaluation argues that face-to-face

visits need to be further evaluated before their impact can be adequately assessed.

The evaluation also found that those who lived in the demonstration neighborhoods and said they were not helped made significantly more of their trips by carpool and other alternative modes than those who said they were not helped. This may be due to the fact that people who were successfully able to make changes in their travel behavior to alternative travel modes were more likely to say they were helped by the project than those who could not find suitable alternatives to driving alone.

1.0 INTRODUCTION

1.1 OVERVIEW

Since 1974, the City of Lincoln has provided ridesharing promotion and matching services to its residents, primarily for commuting trips. In 1980 the city received a federal ridesharing demonstration grant to expand ridesharing services into the home-end market. The Lincoln Home-End Ridesharing Demonstration Project was designed to assist residents of three test neighborhoods to make trips by means other than single occupancy vehicles. An important aspect of the project was the use of part-time interns who served as neighborhood ridesharing agents. These agents provided personalized assistance to neighborhood residents in identifying suitable alternative modes of travel (i.e., car/vanpool, transit, bicycle). In the course of the project, the demonstration gave particular emphasis to carpooling for student related travel.

The demonstration ran for approximately two years from May 1980 through July 1982. It assisted approximately 600 individuals.

1.2 LINCOLN'S RIDESHARING PROGRAM

The City of Lincoln has been involved in ridesharing activities since the 1974 oil embargo. Initial efforts were conducted by volunteers under the auspices of the JayCees. This original program assisted commuters in finding suitable matches for carpools as an alternative to single-occupancy auto travel to and from work.

In 1977, Lincoln began a full-time, professional, federally funded operation. The goals of the Lincoln Carpool/Vanpool Program (as it was named) are to save energy, reduce air pollution, and ease traffic congestion. The program focuses on work trips through employer based activities. It is staffed by

Lincoln Department of Transportation personnel who conduct promotional campaigns and operate a matchlist service.

Between 1977 and 1979, the program reached an estimated 23,620 employees. The program prepared 3,619 match lists for these employees. Of the 3,619 who received match lists, nearly 30% (1,081) later reported that they were ridesharing.

1.3 THE HOME-END RIDESHARING DEMONSTRATION PROJECT

In 1980 Lincoln expanded its ridesharing efforts to include a home-end, non-work trip ridesharing demonstration project. With federal funding, the city's Carpool/Vanpool Program launched a neighborhood-based program to promote and foster transit use, carpooling, walking and bicycling for all trip purposes. The demonstration project sought to expand the concept of ridesharing to residents in three test neighborhoods. A special feature of the project was the use of ridesharing agents, individuals hired to work directly with residents. This personalized service was designed to contrast with the more anonymous commuter-oriented ridesharing program.

The three neighborhoods used in the project were chosen to represent communities in contrasting stages of development. One was a well established area with little new development. The second was a recently established area near the periphery of the city, while the third was a newly emerging community also on the outskirts of Lincoln. In all, there were slightly more than 3,000 households in the three neighborhoods.

The demonstration unfolded in three phases. The first was the selection of the three test neighborhoods. In the second, agents canvassed the test neighborhoods to develop transportation profiles. Project staff then developed action plans from these profiles. The action plans guided the project activities in each area. Once these plans were developed, the project moved into the third phase--implementation of the action plans. In this phase, the ridesharing agents worked in the

community to facilitate ridesharing, transit use, walking and bicycling. The demonstration concluded on July 31, 1982.

1.4 EVALUATION ISSUES AND RESEARCH DESIGN

The Lincoln Home-End Ridesharing Demonstration provided the experience to help determine whether home-end ridesharing interventions work and whether they are worthwhile. The relevant evaluation issues included:

1. Did the project increase ridesharing and alternative mode use?
2. Was the project perceived by residents as helpful?
3. Did the visits by ridesharing agents promote carpooling and alternative mode use?

The evaluation included a review of project records as well as analysis of a survey conducted to collect information on residents' socio-economic characteristics and travel behavior. The survey included two groups of respondents. The first was composed of those respondents who lived in the project neighborhoods and were exposed to the demonstration services. The second group included residents from the rest of Lincoln who were not exposed to the demonstration. The evaluation compared the survey results between these two groups to assess whether the project had any impact.

1.5 ORGANIZATION OF REPORT

This evaluation report is composed of five chapters including the Introduction. Chapter 2 describes Lincoln's population, geography, employment and transportation characteristics. It includes detailed information on each of the three project neighborhoods, Bethany, Colonial Hills, and Fairfield Park. Chapter 2 also traces the history of Lincoln's Carpool/Vanpool Program, outlines its objectives and provides some

information about its results. Chapter 3 describes the demonstration and its relationship to the Carpool/Vanpool Program.

Chapter 4 is the formal evaluation of the demonstration project. In this chapter are discussed issues of survey administration, response bias and project results.

Chapter 5 summarizes the findings of the evaluation and discusses what was learned in Lincoln that may be useful for other ridesharing programs.

2.0 DEMONSTRATION SETTING

2.1 GEOGRAPHY, POPULATION, EMPLOYMENT CHARACTERISTICS

Lincoln is located in southeastern Nebraska, 55 miles southwest of Omaha and 215 miles northwest of Kansas City, Missouri. The city sits on gently rolling terrain and is bordered on the west by the Salt Creek. Between 1970 and 1980, Lincoln's population grew by 16% to 171,787, over 95% of whom are white. The city has 66,533 dwelling units, 62% of which are single-family houses. In 1980 there were an estimated 108,000 workers in the Lincoln area. The area's unemployment rate, 3.2%, was among the lowest in the nation. Median family income was $21,319.

Founded in 1859, Lincoln has been Nebraska's capital since 1867. In 1980, local, state and federal government agencies employed 25% of the workforce. Most government workers are employed at Lincoln Center in the central business district and at the nearby University of Nebraska campus. Major industries in Lincoln include rubber, food processing, recreational vehicle manufacturing and insurance.

2.2 TRANSPORTATION CHARACTERISTICS

The city is located on Interstate-80 midway between San Francisco and New York. The city was built on the grid system and is served by one north-south and two east-west federal highways as well as one east-west state highway.

There were some 121,291 registered motor vehicles in the city in 1980, of which 93,129 were cars. The city-wide average number of vehicles per person and per household were 0.7 and 1.8, respectively.

The city is served by the Lincoln Transit System (LTS) which is owned and operated by the Transportation Department.

LTS operates 65 vehicles, including 9 vans equipped for elderly and handicapped persons. In the 1980 fiscal year, LTS carried 3.1 million passengers. One taxicab company also serves the city. Social service agencies also provide paratransit services and, in 1977, accounted for approximately 140,000 trips.

An active ridesharing program has been promoting and facilitating carpooling and vanpooling in Lincoln since 1977. The Lincoln Carpool/Vanpool Program is currently operated by the Transportation Development Division of Lincoln's Transportation Department.

In terms of travel characteristics, Table 2.1 presents mode splits for home-work travel for the Lincoln area. It indicates that the drive-alone mode is the predominant mode for Lincoln commuters, as is typical in most American cities and metropolitan areas.

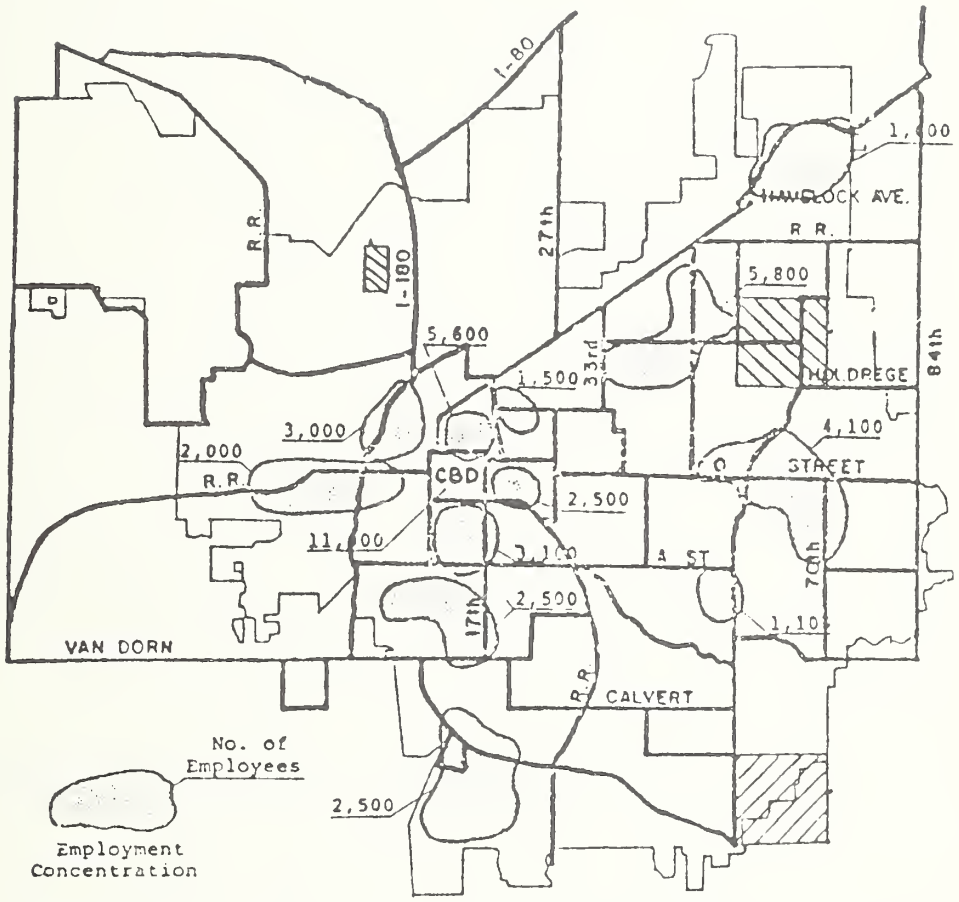
TABLE 2-1. LINCOLN AREA HOME-WORK COMMUTE BY MODE, 1980

Drive alone	64.0
Carpool	21.6
Bus	5.2
Walk	7.0
Other	2.1

(Source: 1980 Census Data)

The CBD employs some 11,000 people, about 10% of the total Lincoln area workforce. Figure 2-1 shows employment concentrations for Lincoln and clearly indicates the dispersed nature of employment in Lincoln. This condition suggests that commute trips are more amenable to carpooling than to transit, which generally cannot well serve dispersed trip ends.

Traffic surveys indicate that the 1980 average auto occupancy rate was 1.40 persons per vehicle. The city has a goal to increase auto occupancy to 1.75 to reduce traffic and parking congestion, to conserve energy, and, by the year 2000, to improve air quality. The primary aim of Lincoln's



Source: 1970 Planning Data for Lincoln Metropolitan Study Major Review

FIGURE 2-1. LINCOLN EMPLOYMENT CONCENTRATIONS

ridesharing program is to increase vehicle occupancy to achieve this goal.

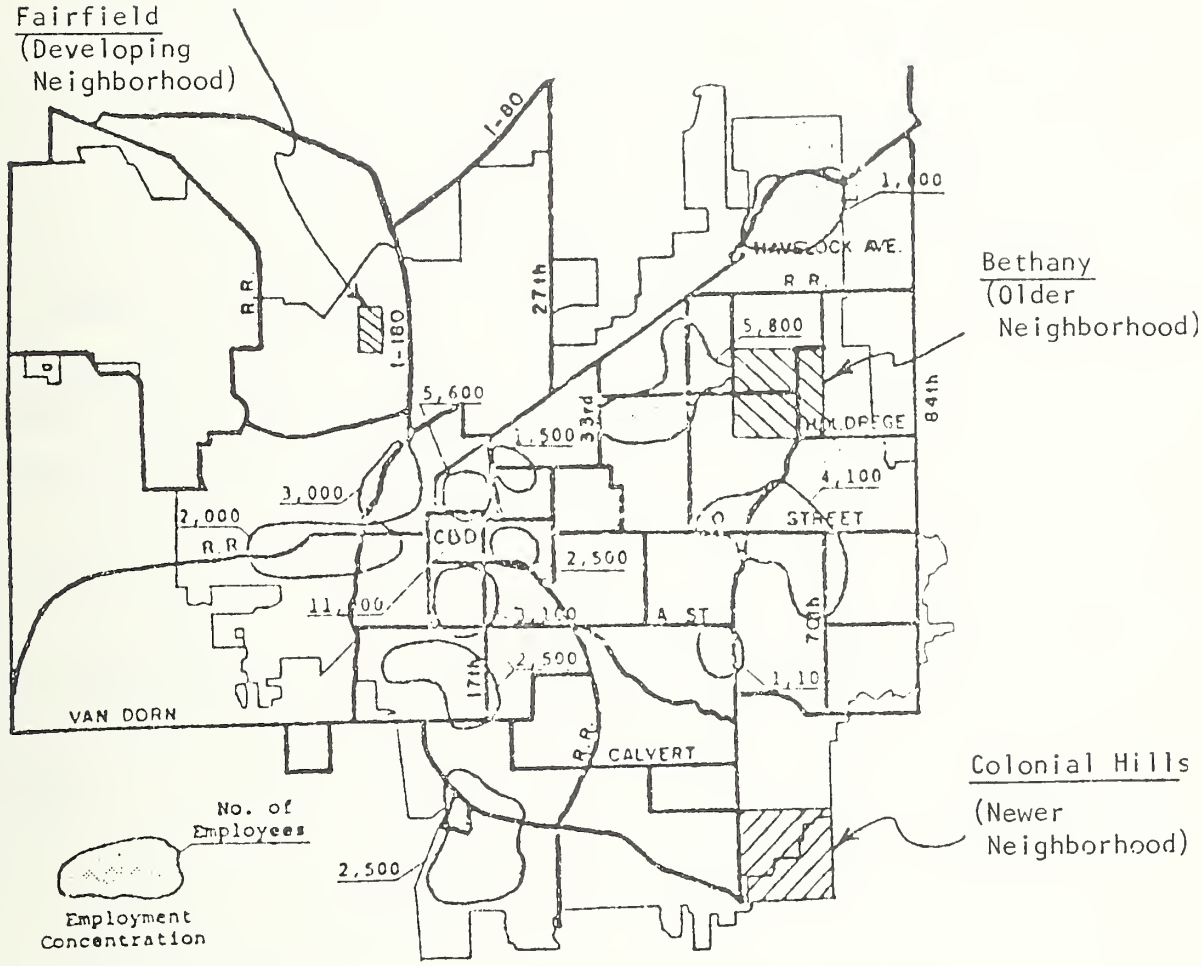
2.3 PROJECT NEIGHBORHOOD CHARACTERISTICS

Three neighborhoods were selected for the demonstration project--Bethany, Colonial Hills and Fairfield Park (see Figure 2-2). Bethany is an older, established neighborhood, about one square mile in size, located in northeast Lincoln approximately five miles from the downtown. There are about 2,000 households in Bethany. Average household size is 2.6 persons. The neighborhood tends to be the home of older residents; nearly 20% of those surveyed by the project were 65 and older. The project survey found that there were an average of 2.2 vehicles per household. Of those surveyed, 46% drive alone to work, while 26% carpool and 13% use transit. Major work areas for Bethany residents are the northeast quadrant of the city and include the Goodyear facility and Lincoln's downtown.

Bethany is served by two supermarkets and two elementary schools, one junior high school, and one senior high school. Two schools (an elementary school and the high school) are located within the neighborhood's boundaries. There are three commercial areas on the perimeter of the neighborhood.

Two transit routes serve Bethany on a regular basis--Bethany and University Place. These routes serve the Lincoln Center CBD and the University of Nebraska. Most Bethany residents live within six blocks of a bus stop.

The second test neighborhood was Colonial Hills, a five-year old (as of 1979) neighborhood located in southeast Lincoln, five miles from the CBD. There are about 1,000 households in Colonial Hills, and survey results indicate an average occupancy of 3.6 persons per housing unit. A newer neighborhood, Colonial Hills has a younger population than Bethany--only 5% of survey respondents were 65 years old or older.



Source: 1970 Planning Data for Lincoln Metropolitan Study Major Review

FIGURE 2-2. DEMONSTRATION PROJECT NEIGHBORHOODS

Colonial Hills has a large school age population; approximately 42% of the neighborhood's residents are between 5-18 years old. According to the project survey average motor vehicle ownership was 2.4 per household. The canvassing survey found that 60% of Colonial Hills' workers drive alone to work, 22% carpool, and 4% use transit. Major work areas include the nearby southeast quadrant of the city, the CBD and the East Campus of the University of Nebraska.

Colonial Hills is served by two grocery stores and an elementary school, a junior high school and a senior high school. However, none of these schools are within the neighborhood boundaries. LTS provides peak-hour-only express bus service to the CBD. The project survey revealed that 62% of respondents had some or great concern about transportation. In contrast, 64% of Bethany residents had little or no such concern. This is probably due to Colonial Hills' relative isolation and its lack of schools. Because there are no schools within Colonial Hills, pupils must cross busy streets to get to school.

The third area, Fairfield Park, opened during the demonstration. Its first residents moved into their homes in December 1981. Fairfield Park is in northwest Lincoln. Available information from the evaluation survey indicates the following characteristics of this neighborhood.

The average size of Fairfield Park households was estimated to be 2.8 persons; over one-third (37%) of households surveyed had only one person. Most Fairfield Park households (91%) have one or two vehicles. Fifty-seven percent of the survey respondents had 1980 household incomes under $15,000. This is not surprising given that Fairfield Park was built primarily for low-income families. Employment in this neighborhood is low--11.4% of the households surveyed had no workers. (Whether the low employment is due to age or other factors cannot be determined from the survey results.) Most Fairfield Park households (68.6%) have exactly one person

employed. In comparison, only 9% of Bethany households and 14% of Colonial Hills households have exactly one worker.

The neighborhood is composed mostly of woman-headed households with low income, relatively high unemployment, and small family units. In these respects, Fairfield Park is atypical of the general Lincoln population.

Table 2-2 below gives pre-demonstration figures for the three neighborhoods.

TABLE 2-2. PRE-DEMONSTRATION NEIGHBORHOOD PROFILE

	Bethany	Colonial Hills	Fairfield Park
Number of Households	2,000	1,000	50
Average occupancy (persons/housing unit)	2.6	3.6	2.8
Average number of motor vehicles per household	2.2	2.4	1.5
Home-work travel modes			
Drive alone	46%	60%	Data Not
Carpool	26%	22%	Available
Transit	13%	4%	
	(n=473)	(n=464)	

Source: Project canvassing survey.

2.4 LINCOLN RIDESHARING PROGRAM

2.4.1 History

Lincoln's interest in and promotion of ridesharing began in 1974, when the Junior Chamber of Commerce (JayCees) organized a volunteer computer matching program among local businesses to facilitate ridesharing. This effort was in response to the energy crisis precipitated by the Arab oil embargo. This effort soon stopped when the oil crisis ended.

In 1977, the city began operation of its Carpool/Vanpool Program. Funded in large part with Federal Highway

Administration (FHWA) monies authorized by the Emergency Energy Conservation Act, the program's goals are as follows:

- Establish a program encouraging carpooling and vanpooling as a complement to Lincoln's overall transportation system.
- Work toward achievement of an overall auto occupancy rate of 1.75 persons by the year 2000 to reduce traffic congestion.
- Conserve energy resources.

The program's focus is on employers and on work trips, since these trips have the lowest average occupancy (1.23 persons per auto in 1977). The program staff works directly with employers as program sponsors who designate Employee Transportation Coordinators (ETC). These ETCs promote the ridesharing concept at the work-site and assist enrollees in the effort to find suitable matches for pool formation.

2.4.2 Program Organization

The Lincoln Carpool/Vanpool Program operates within the Transportation Development Division of Lincoln's Department of Transportation. Three staff members organize activities, plan strategy, produce materials and implement the program:

- The Administrator is concerned with planning, organization and promotion.
- The Assistant is in charge of production, client services and data gathering.
- The Clerk-Typist handles call-in clients and office procedures.

The staff works directly with employees and also through the ETCs, who serve as agents for the program. While the focus is on work trips, the program does assist the public with non-work trips, principally through churches, public service groups and evening schools. These non-work trips are handled manually, whereas the commuter match requests are computerized.

2.4.3 Lincoln Carpool/Vanpool Program Results

Since its inception in 1977, the program has worked with hundreds of employers to promote and facilitate ridesharing. The program uses the Employment Center Area (ECA) concept to target smaller organizations. Essentially, the ECA groups several small employers in close (1/2 mile) proximity to one another to increase the chance of finding suitable matches.

In 1982, the program had 276 active private employers in the client base. This was in addition to local, state and federal employers which work with the program. In that same year there were 2,643 enrollees in the program's computer files. Nearly 4,000 individuals requesting ridesharing assistance were served in 1982.* The Program provided 2,390 match lists (both manual and computer) to individuals in 1982.

According to program reports, the 1982 placement rate was 27%, including individuals in the project neighborhood who requested School/Pool assistance.

Between 1981 and 1982, the program experienced a net gain of 8% in the number of active participants. While there were approximately 6700 identified drop-outs, the program reported 1,700 new participants in 1982. In 1981 it was estimated that there were 1,013 enrollees in 1982 who were ridesharing.

A significant amount of the program's efforts are associated with assisting previous enrollees. For instance, 45% of phone calls in 1982 were from previous enrollees requesting new match lists. Only one-quarter of the calls were from new enrollees.

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*All figures exclude demonstration project-related activities unless otherwise stated.

2.4.4 Ridesharing Promotional Campaigns

Since its start in 1977, Lincoln's Carpool/Vanpool Program has conducted many different promotional campaigns to increase awareness and participation in ridesharing and transit use. The program uses most types of media to market its services and to promote ridesharing--radio and TV, posters in shopping malls, newspaper ads, etc. "Carpool Only" and Park-and-Ride lot signs were developed by the program for employers offering preferential parking and for churches allowing use of their lots for park and ride arrangements.

The program regularly operates and evaluates special advertising campaigns to increase commuter awareness in ridesharing. One such program, the "Cold Turkey Challenge," received national attention. The program also targets special audiences with promotional campaigns. For instance, the Program targeted commuters to Omaha in 1982. These commuters, who daily travel an estimated 110 miles round-trip, were the subject of a special effort. The staff matched these commuters not by home location but rather by work-site location. The commuters were invited to a get-together and information sharing meeting. The result of these efforts was a net gain of 34 poolers (among those who commute to Omaha) by the end of the year.

3.0 PROJECT DESCRIPTION AND IMPLEMENTATION

3.1 PROJECT OBJECTIVES

In May 1979 Lincoln submitted an application to FHWA for funding of its proposed Home-End Ridesharing Demonstration. The project was conceived as an adjunct to Lincoln's existing ridesharing program, which is focused on the work trip and relies on an employer-based matching program. The project, in contrast to this traditional approach, was focused on ridesharing matching for work and non-work trips in residential areas of Lincoln. It was to offer personalized matching services through the use of neighborhood ridesharing agents, who would work directly with residents in three contrasting neighborhoods.

The specific objectives of this project were to:

- Expand the concept of ridesharing and the process of matching to all home-based trips.
- Determine the impact of personal assistance in carpool and vanpool formation, in contrast to the traditional computerized, impersonal matching approach.
- Broaden the clientele to include the elderly, handicapped, youth and homemakers.
- Assess user response in three separate residential areas in contrasting stages of development--i.e., a newly developing residential area on the periphery of current development, a recently established residential area near the periphery, and an older established neighborhood with little new development.
- Evaluate the feasibility of working with real estate developers and sales representatives in promoting ridesharing in peripheral areas of a small urban area where traditional public transportation services may not be practical.

The essential elements of this project, beyond the emphasis on home-end ridesharing, were an interest in testing the

concept in different types of neighborhoods, the development of transit and ridesharing amenities in a new neighborhood, and personalization of ridesharing marketing and matching activities.

The demonstration project was to apply innovative marketing and matching techniques to market segments generally regarded as too diffuse and, therefore, too expensive to reach. These techniques were to be summarized and presented in neighborhood Transportation Action Plans (TAPs). The TAPs were strategies designed to assist neighborhood residents to travel by means other than driving alone. (See Figure 3.1)

3.2 RELATIONSHIP TO LINCOLN CARPOOL/VANPOOL PROGRAM

The demonstration project had many direct links to Lincoln's existing ridesharing program. First, the project was developed and managed by the program staff. Second, the demonstration project was clearly an adjunct to the ridesharing program. The demonstration project's home-end focus was intended to complement the work-end focus of the existing program. Third, the demonstration project would operate concurrently with the ridesharing program to complement its objectives of increasing auto occupancy and reducing traffic congestion, energy consumption and improving air quality.

By using the same staff in both the Lincoln ridesharing program as in the demonstration, it was possible to share knowledge and experience about the Lincoln traveller. As a consequence, the demonstration could be operated quite efficiently since there was little need (except in the case of the ridesharing agents) to train personnel about the concept of ridesharing and the matching process.

3.3 PROJECT MANAGEMENT, ORGANIZATION, AND STAFFING

The Transportation Development Division (TDD) of Lincoln's Transportation Department was designated as the entity

BETHANY

A. Respondents, almost two to one, indicate they have little concern about transportation.
GOAL: Determine what transportation resources are being used at maximum efficiency and consider refinements.
PERFORMANCE MEASURE: Random survey to determine use of existing resources and increase use beyond survey based use reported.

B. Approximately 23% of the Bethany population surveyed is 18 years or under and attending public school, one of which closed in June, 1981.
GOAL: Develop a neighborhood parent based carpool program among Bethany parents whose children are being transferred to the other two available elementary schools. Increase energy efficient travel among junior high and high school students through cooperation of school administration and students.
PERFORMANCE MEASURE: Count the number of carpools organized among parents for school trips. Survey secondary students to determine how they traveled to school this year through cooperation of student council or an environmental class.

C. Many elderly reported not traveling at all.
GOAL: Increase options for elderly including carpooling to church and shopping.
PERFORMANCE MEASURE: Phone surveys of elderly households to determine increase in shopping for selves. Monitor through two churches to note increased attendance through member-friend carpool formation.

D. Eighty percent of the Bethany respondents shop at Gateway one mile away.
GOAL: Develop options for shopping at Gateway using alternatives to driving alone.
PERFORMANCE MEASURE: Creation of a pooling system via car or van or shuttle bus.

E. Identify van owners and encourage use of van for pools on all trip types.
GOAL: Link potential passengers to van owners in driver owned and operated vanpools for all trip types.
PERFORMANCE MEASURE: Telephone survey of van owners to determine pool uses.

COLONIAL HILLS

A. Respondents indicate they would use walking and bicycling to nearby shopping if available and safe.
GOAL: Help remove barriers such as lack of sidewalk and safe bicycle routes and educate and encourage use of both modes to 56th and Highway 2 shopping.
PERFORMANCE MEASURE: After sidewalk in place, random surveys to determine count of persons walking or bicycling to shopping center.

B. Thirty-eight percent of the van owners in Colonial Hills report driving alone.
GOAL: Maximize the potential of van use for work and school trips by linking passengers with drivers in driver owned and operated vanpools.
PERFORMANCE MEASURE: Telephone survey of van owners to determine pool formation.

FIGURE 3-1. TRAVEL ACTION PLAN GOALS & PERFORMANCE MEASURES

C. Only four percent of the Colonial Hills employees are using the bus express route though 27% of the respondents report working downtown.
GOAL: Encourage increased use of bus to Lincoln Center for employees living in Colonial Hills.
PERFORMANCE MEASURE: Increase in boarding counts of the Express bus.

D. Sixty-six percent of the Colonial Hills employees are currently driving alone to work.
GOAL: Reduce the number of persons driving alone to work by increasing the enrollment and carpool formation through Lincoln's Carpool/Vanpool program. (Facilitates parents dropping kids at sitters'—based on 1.6 workers per household.)
PERFORMANCE MEASURE: Increasing number of Colonial Hills enrollees and persons reporting carpooling to the Lincoln program by 20%.

E. Approximately 42% of the Colonial Hills population is school age and safety is a reported concern of parents.
GOAL: Develop a neighborhood based carpool program to school in cooperation with the schools represented.
PERFORMANCE MEASURE: Number of school carpools organized through neighborhood.

F. Sixty-six percent of the Colonial Hills respondents reported great or some concern about transportation so a climate of receptivity exists.
GOAL: Organize the neighborhood interests to develop and use the resources available to them.
PERFORMANCE MEASURE: Random survey to determine what travel changes have occurred between 1981 and 1982.

FAIRFIELD PARK

A. Developing residential areas are unique opportunities for changing old habits and encouraging new ones in design.
GOAL: To determine the institutional and other barriers to efficient transportation in design and overcome such barriers for maximum use of alternatives to driving alone among residents.
PERFORMANCE MEASURES: Recording the barrier and method of facilitating efficient transportation in spite of it in the developing area through the close of the Demonstration Project.

B. Developing residential areas are unique opportunities for changing old habits and encouraging new ones in behavior.
GOAL: To market a package of efficient easy transportation alternatives as new residents move into the units using personal contact to achieve use.
PERFORMANCE MEASURE: Survey residents six months after move-in to determine awareness, use and concern for transportation alternatives to driving alone.

Source: Lincoln project records

FIGURE 3-1. TRAVEL ACTION PLAN GOALS & PERFORMANCE MEASURES (Cont'd)

responsible for organizing and implementing the demonstration project. The TDD consists of two sections, the Lincoln Carpool/Vanpool Program and the Transit Planning Section. The first section operates all aspects of Lincoln's ongoing ridesharing activities. The Transit Planning Section carries out planning activities for the city and the transit system. It is also responsible for assuring that the city complies with all federal transit planning regulations. The lead planner in this section acts as supervisor for the division as a whole.

The carpool program administrator and the lead transportation planner were responsible for final study design, identification and analysis of alternative transportation options as well as formulation of the neighborhood transportation action plans. Day-to-day responsibilities for the progress of the project were delegated to the carpool program administrator and his assistant. Part-time interns were hired to conduct the initial canvassing and to serve as neighborhood ridesharing agents.

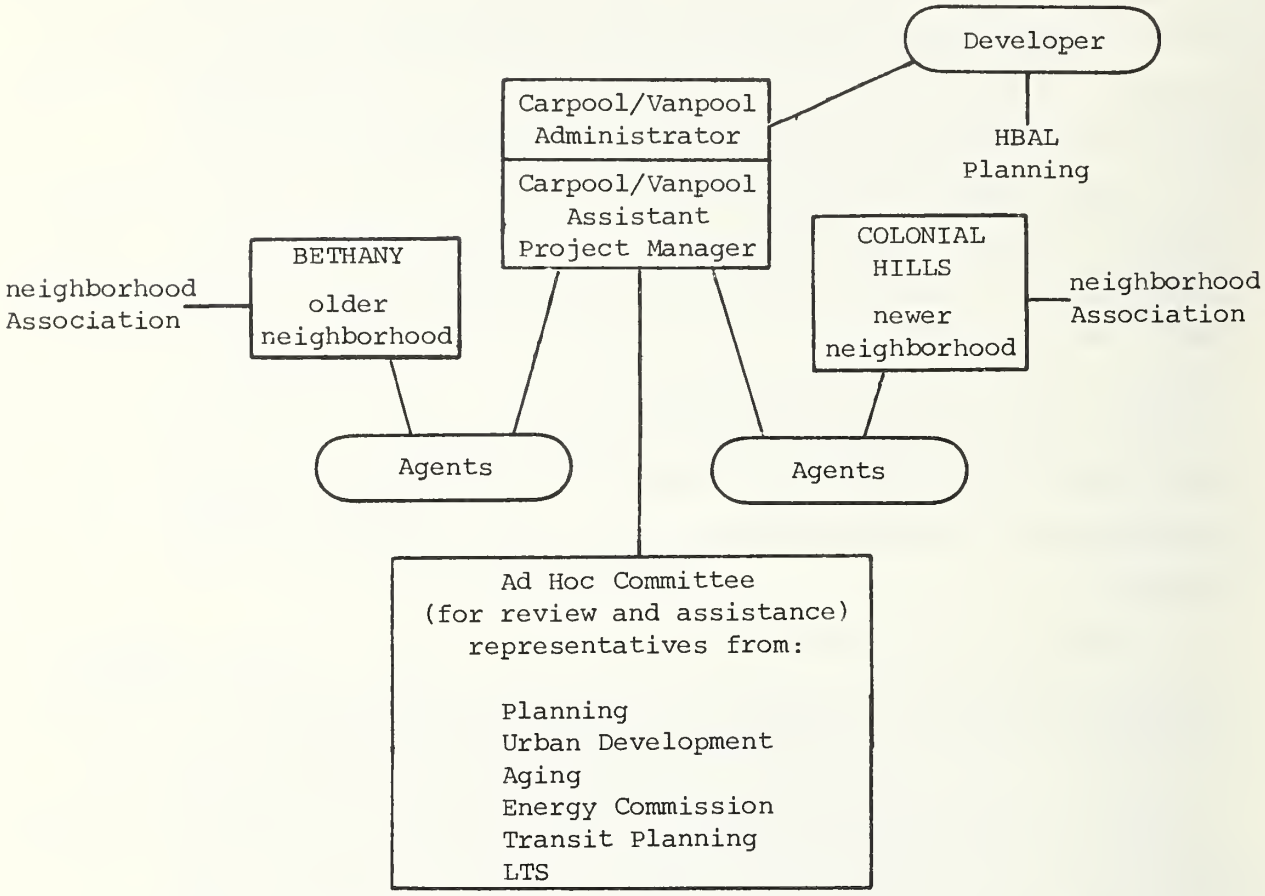
Figure 3-2 shows the organization chart for the demonstration project. Included in the organization is an ad-hoc technical advisory committee. The members of this committee, including staff from the Traffic Engineering Division, the Lincoln Transportation System, and the city's Urban Development and Planning Departments, were to serve as advisors and resources to the project staff. In addition, the Administrative Division of the Lincoln DOT was represented on this committee to provide overall direction and guidance to the project staff. Representatives from the Mayor's Energy Action and Aging Committees were also represented in this ad-hoc organization.

The demonstration project staff was to be linked through the ridesharing agents to the neighborhood associations of the two established residential areas. The project staff also worked directly with the developer of Fairfield Park to create transit amenities in the community.

LINCOLN NEBRASKA
RIDESHARING DEMO PROJECT

ORGANIZATION CHART

Project Manager: Carpool/Vanpool Section of
Transportation Development Division
Lincoln Transportation Department



Project Manager Responsibilities:

1. Assist Planning and Implementation per Letter of Interest
2. Supervise Ridesharing Agents
3. Coordinate Data Collection
4. Assure Deadlines are met via revised Timetable
5. Write Monthly Reports

Carpool Program Administrator

1. Organize tasks, schedules in cooperation with Project Manager
2. Supervise Developer Implementation
3. Review Project Progress and Assist Implementation
4. Assure Budget Constraints

FIGURE 3-2. ORGANIZATION CHART

The role of the neighborhood ridesharing agents in the test areas resembled that of the Ridesharing Program's Employee Transportation Coordinators (ETCs) at the work sites. However, unlike the ETCs, the neighborhood ridesharing agents were employees of the project. The use of both was quite similar, to serve as personalized "change agents," working directly with potential transit users and ridesharers.

3.4 PROJECT BUDGET

3.4.1 Actual Budget

Actual costs which can be identified as related to the project (excluding the evaluation) are shown below:

Clerical and professional staff salaries and benefits	$12,272
Ridesharing agents	3,487
Shuttle bus	6,635
Miscellaneous	2,726
Evaluation survey	5,950
TOTAL	$31,070

The actual costs included $6,635 for a Christmas shopper shuttle bus which operated between Thanksgiving and Christmas, 1981. One of the main reasons the project's costs were so low was relatively low labor costs. These costs accounted for about half (51%) of the project's total cost. The ridesharing agents, in particular, were quite inexpensive. The agents worked part-time and were paid the minimum wage. While these important personnel were paid modest wages, they were found to be quite efficient. It is estimated that they visited approximately 725 households in their approximately 1000 person-hours of project work. Housewives were employed as the ridesharing agents after the project found student interns to be unreliable in this capacity. The great advantage with the housewives was

that they lived in the neighborhoods in which the demonstration took place. They found it easy to relate to their neighbors and to talk with them about the project and their travel needs.

4.0 PROJECT EVALUATION

4.1 PROJECT OBJECTIVES, MARKET AND CLIENTS

As stated in Section 3-1, the objectives of the Lincoln demonstration project were to expand the concept of ridesharing and the matching process to all home-based trips in three neighborhoods. The project was to provide personal assistance to residents of selected neighborhoods to find ways to travel other than by single-occupancy vehicle. The project also tested the impact of personal assistance on carpool formation and transit use to determine whether such assistance was more effective than impersonal, computerized services more commonly offered by ridesharing programs.

The market area for the demonstration included three carefully selected neighborhoods in contrasting stages of development. These neighborhoods included an older established area (Bethany), a newer, recently developed community also located in the periphery (Colonial Hills), and a newly-opened development (Fairfield Park). Three different neighborhoods were chosen to see whether client response would differ between the areas.

The clients for the project were the residents of the three neighborhoods. Unlike traditional, work-end programs, the Lincoln demonstration project targeted homemakers, youth, the elderly, and the handicapped. During the course of the project, particular attention was given to home-school travel. Consequently, students (elementary, junior high and high school) were especially targeted.

4.2 RESEARCH DESIGN AND EVALUATION ISSUES

The demonstration was evaluated as a controlled experiment. The idea is to measure whether an intervention had any effect on behavior by comparing attitudes, opinions, and

actions of people who were subjected to the intervention (the treatment group) to the attitudes, etc., of others (the control group) who were not. This method provides a means by which it is possible to determine whether the intervention had any impact by assuming that all other things (exogenous factors) affect both groups equally.

The following hypotheses were developed to evaluate whether the demonstration was successful:

a. Proportionally more test area respondents (the treatment group) than control group respondents would say they were helped by ridesharing services to make more of their trips by carpooling and alternate modes.

b. Carpooling and alternative mode use in the demonstration neighborhoods (the treatment group) would be greater than in the rest of Lincoln (the control group).

c. Proportionally more of those who were visited by the ridesharing agents would say that they had been helped to make more of their trips by alternative means, as a result of ridesharing project activities, than those who did not receive a visit.

d. Carpooling and alternative mode use in the demonstration neighborhoods would be greater after the project than before.

e. Proportionally more residents in the treatment area who said they were helped by the project to make more of their trips by alternative means would, in fact, do so than those respondents in the test area who said they were not helped and those in the comparison group who said they had been helped.

f. Carpooling and alternative mode use would be greater among those visited by ridesharing agents than among those not visited.

4.3 DATA COLLECTION METHODOLOGY

To test these hypotheses and evaluate the project, a telephone survey of Lincoln residents was conducted in June 1982. The project had ceased operating in February of that year, some five months before the evaluation survey was conducted. The data collection effort surveyed 803 residents in the treatment

neighborhoods and the control group, which was the rest of Lincoln.

There were two sub-samples in the project neighborhoods: 1) follow-up surveys to prior visits by ridesharing agents; and 2) random interviews. The control group sample was random. To increase the proportion of non-work to work trips, all random interviews were divided equally between worker and non-worker only samples. Table 4-1 below shows the breakdown of the sample by its various subgroups.

TABLE 4-1. SURVEY SAMPLE GROUPS

	Bethany	Colonial Hills	Fairfield Park	Total Test	Control
Follow-up	126	125	0	251	0
Random					
Non-worker only	66	71	18	155	127
Worker	64	63	17	144	125

The survey asked basic demographic information of the respondent households (see Appendix 1). Respondents were also asked for a log of all trips made in the 24 hours prior to the interview. To include both weekdays and weekends, interviewing was spread over all days of the week.

Because school was out of session for many, retrospective questions (e.g., "When school was in session...") were used for school-related travel. Because of the reliance on respondents' memories and the fact that some respondents' children were not in school while others were, there exists the potential for response inaccuracies.

It should be noted that no record was made of those unemployed among the "worker" interviews in the random group. Consequently the percentage of unemployed cannot be determined. Also comparisons of trip making between the employed and the unemployed cannot be made.

Because of Fairfield's small size (50 households) and small sample (35), caution must be used with reporting travel

related data. Statistical manipulations can control for the variance in the data. However, because Fairfield Park is so small, it is more likely a unique neighborhood. Therefore survey results from Fairfield Park may not be very useful for generalizations. This is especially true because Fairfield Park's residents are atypical of the general Lincoln population. As discussed in Section 2.3, Fairfield Park is a low-income, minority neighborhood, whereas most of Lincoln is white and of moderate income.

Also, reporting mode splits by neighborhood and trip purpose is prone to distortion because of the few cases. The survey also breaks down when mode splits for specific trips are compared with various project activities. For instance there were only three cases in the survey of school trips that could be compared with whether respondents were helped by visits from ridesharing agents, information about pooling left on their doorknobs, and so forth.

Throughout this evaluation, a critical issue is whether the demonstration assisted or influenced people to change the way in which they traveled. Four of the six evaluation issues relate to whether the project assisted people.

It is important that the idea of assistance, as it relates to this project, be well-defined and hence, understandable to the reader. This is especially important because the concept of assistance can be interpreted in a few different ways, and because the way it is interpreted affects the evaluation issues.

Survey respondents were asked whether any of a variety of materials helped or influenced them to make more of their trips by carpool and other alternative modes. On first reading the question, it would be seen as meaning that being helped would have directly led to making trips by means other than single-occupancy automobile. The problem with such an interpretation is that it implies that being helped was predicated on positive project impact. Those who carpooled, etc. would tend to say

they were helped more often than those who were not carpooling or using other alternative modes.

The definition of assistance also affects the project evaluation in that if being helped is interpreted strictly (as resulting in more carpooling, etc.) it ignores other project impacts, such as motivating people. It also ignores those who tried but were unable to make more of their trips in alternative modes.

Nevertheless, this evaluation defines help in terms of getting people to use alternative modes, since this was a major goal of the project.

4.4 EVALUATION OF PROJECT EFFECTIVENESS

This section evaluates the project in terms of each of the hypotheses set out in Section 4.2.

4.4.1 Assistance by Project Neighborhood

Do proportionally more respondents in the demonstration neighborhoods than in the rest of Lincoln say that they were helped by the ridesharing services to make more of their trips by alternative modes?

Table 4-2 below presents the results for all the project neighborhoods combined versus the control group.

TABLE 4-2. RESPONDENTS INDICATING HELP FROM RIDESHARING SERVICES

	Total	Non-TV
Project neighborhoods	11.2%	7.6%
Rest of Lincoln	11.2%	5.6%

Sixty-two out of 550 respondents in the demonstration neighborhoods stated they were helped by the ridesharing services to make more of their trips by alternative modes. Of these 62, twenty stated that they were assisted by television

advertisements only. Since these ads were not part of the demonstration but rather were conducted by the Carpool/Vanpool Program, it is reasonable to exclude those respondents who were assisted only by television advertisements from the assessment of the project's impact. This leaves 42 respondents (or 7.6% of the sample) in the demonstration neighborhoods who stated that they were given assistance by ridesharing services. Fourteen respondents (out of approximately 250) or 5.6% in the control group stated they were assisted by ridesharing services other than just television advertisements.

This suggests that the project was somewhat successful in helping people to make trips by alternative modes. However, it should be noted that some of the demonstration neighborhood residents who said they were helped by the project were included in the follow-up survey. Hence, these people were exposed to the personal visits and were especially targeted for questioning during the survey. This may skew the results reported in Table 4-2 to some extent since these people may have been more predisposed to stating that the project assisted them. In essence,the project neighborhood data shown in Table 4-2 is not based on a strictly random sample, and therefore the impact of the project may be overstated.

4.4.2 Mode Split by Project Neighborhood

Is there more carpooling and alternative mode use in the demonstration neighborhoods than in the control group?

Table 4-3 presents the percentage of trips made by these modes for all trip purposes, work trips, and school trips. Overall, the data indicate that, proportionally, no more trips were made by carpooling and alternate modes in the demonstration neighborhood than in the rest of Lincoln. Table 4-3 also shows that more school trips in the demonstration area were made by carpooling, etc., while fewer work trips were by these alternate modes. Neither difference is statistically significant at the 90% level of confidence. The inconsistency

in the differences between the mode share between the two groups for work and school trips suggests that there was no overall trend towards greater carpooling and alternate mode use in the project neighborhoods. This inconsistency may be due to sampling error, pre-existing conditions, differences in project effectiveness among different types of trips or a combination of these factors. Further, the small sample of work and school trips may be making it difficult to generalize and to compare mode splits for specific trip purposes to the mode split for all trip purposes overall.

TABLE 4-3. CARPOOL AND ALTERNATIVE MODE TRAVEL BY TRIP PURPOSE

	Demonstration Area	Control Area
Total trips--all purposes	1,568	696
Carpool and alternate modes	51%	50%
Work trips	436	123
Carpool and alternate modes	31%	33%
School trips	27	35
Carpool and alternate modes	41%	37%

A key element of the demonstration was to focus activities on three contrasting neighborhoods to see if there might be any differences among them. Table 4-4 below presents, by neighborhood, the percentage of trips made by carpool, etc. for all trip purposes overall.

Table 4-4 shows that there was more carpooling in Colonial Hills, and to a lesser extent Fairfield Park, than in the control area. Alternate mode use was greatest in the control group. However, the sum of carpool and other alternate mode use was greater in all the neighborhoods, except Bethany, than in the control area. The greater interest in transportation problems among Colonial Hills residents (relative to Bethany and Fairfield Park) certainly contributed to a higher level of carpooling there. Also, project staff focused their efforts on Colonial Hills as a neighborhood most likely to change.

TABLE 4-4. ALTERNATIVE MODE USE BY NEIGHBORHOOD FOR ALL TRIP PURPOSES COMBINED

	Number of Persons	Carpool (%)	Alternate Modes (%)	Sum (%)
Bethany	256	40.4	5.5	45.9
Colonial Hills	260	61.8	2.1	63.9
Fairfield Park	35	59.2	4.2	63.4
Rest of Lincoln	253	43.0	7.3	50.3

There is some degree of variability among the mode splits between the three neighborhoods. This might be due to the level of carpooling prior to the demonstration. It may also be due to the differences among the neighborhoods. For example, the level of carpooling was lowest in Bethany. This may be due to the fact that Bethany is generally composed of older residents than Colonial Hills and Fairfield Park. As a consequence, there may have been fewer school trips and therefore less opportunity to carpool. Further, the older Bethany residents might have been more resistant to change. Certainly we know that they were less concerned about transportation issues before the demonstrations began.

Based on the data shown in Tables 4-3, it seems that carpooling and alternate mode use for all trip purposes was about the same in the project area as in the control area. There are indications suggesting that carpooling and alternative mode use was more prevalent in Colonial Hills and for school trips. This suggests that a home-end demonstration project needs to define particular targets rather than to "blanket" an area if it is to be effective.

4.4.3 Assistance by Degree of Personalization

This section addresses the question of whether proportionally more of those visited by the ridesharing agents were helped than those not visited. A positive response to this question (i.e., more in the visited groups were helped than in

the group which were not visited) would suggest that the demonstration was partially successful in that personalized services were considered to be helpful.

Twenty-nine of those surveyed who were in the follow-up group stated that they had been assisted by ridesharing services. This equals approximately 11% of the follow-up sample. Sixty-one respondents in the control group stated that the ridesharing services were helpful. This also equals approximately 11% of that sample population. Based on this comparison, we cannot conclude that the project by itself had any effect on the perceptions of assistance by respondents.

This comparison includes respondents who stated they were helped by many different sources including, among other things, television ads, match lists, and newspaper articles regarding ridesharing. Not all of these were directly a part of the demonstration project. During the course of the project, the regular ridesharing program promoted carpooling through television ads, newsletters, and other outreach efforts. Because of this concurrent activity, it is somewhat difficult to determine the exact extent to which demonstration project efforts assisted residents. The impact of demonstration activities can, however, be approximated by excluding all those respondents who stated that they were helped only by television ads. This discounts the effect of one intervention that was not part of the demonstration but that did have an impact on the perception of assistance.

With the impact of television advertisements excluded, 5.6% of the random sample said they were assisted versus 8.8% of the follow-up sample. The difference between the two samples is large enough to be statistically significant at the 90% confidence level. This suggests that the personalized visits did in fact have a positive impact on people's perception of being assisted. It should be noted that this comparison is somewhat distorted because the random sample includes residents of the control area who were, of course, not visited by

ridesharing agents or otherwise contacted by the demonstration. Excluding the control area residents, the proportion who were helped drops to 3.2% for those visited versus 4.3% for those not visited. This suggests that those visited were no more likely to state they were helped than those not visited. This suggests that the personalized service did not have its intended impact.

4.4.4 Mode Split by Degree of Personalization

Are carpooling and alternate mode use greater among those who were visited than those not visited?

In the demonstration neighborhoods, 43% of respondents' trips for all purposes by those visited were by carpool, while 51% of the respondents' trips made by those not visited were carpool trips.* This difference is significant at the 90% level of confidence ($t = 1.81$). Because its direction is opposite from that expected, it suggests that the personal visits did not have their intended effect. This result may have occurred because those visited by the ridesharing agents might not have always been the predominant trip makers in the households and therefore were not the best candidates for a change in travel mode. This is likely given that most ridesharing agent visits took place during weekdays when most workers would not have been at home.

While this may be a reasonable explanation, results suggest that the visits did not have a positive impact on ridesharing.

In terms of alternate mode use, the survey found that 6% of the trips made by those not visited were by bus, bicycle and so forth. Of those visited, 7.3% of their trips were by alter-

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*For the purposes of statistical analysis, this evaluation used the number of respondents instead of the number of trips. This was done to reduce the problem caused by calculating confidence levels based on the total number of trips, since trips made by the same person tend to be made by the same mode and cannot be regarded as truly independent.

nate means. While the difference is towards a positive project result, it is not statistically significant at a level high enough to draw any conclusions.

4.4.5 Mode Split by Assistance and Neighborhood

Is there more carpooling and alternative mode use among demonstration neighborhood respondents who said they were helped to make more of their trips by alternative modes than among either those respondents who weren't helped or among those who were helped but lived in the control areas? All other things being equal, we would expect that, if the demonstration was successful, there would be more carpooling and alternate mode use by those respondents who lived in the project neighborhoods and said they were helped to make more of their trips by alternative modes.

The test as stated may be somewhat tautological in that a person's perception of being helped to make more of their trips by alternative modes by the demonstration may include having made a change in travel mode from single-occupancy auto to either a carpool or another alternative mode. This being the case, we should expect that those who began to carpool, use transit, etc. as a result of the project would have been more likely to state that they were helped by it than those who did not change their travel behavior.

This issue also raises questions as to how one defines success for the Lincoln project. In a work-end ridesharing program, effectiveness might be assessed by calculating the number of people placed in carpools per the number of requests for such assistance. In the Lincoln project we do not know what this measure is for two important reasons. First, the demonstration attempted to create mode changes among any traveller in the three neighborhoods. This canvassing approach was conducted irrespective of an individual's interest in making a mode change. A part of the Lincoln project was to create an interest in alternate mode use. The project was then to turn

interest into actual mode changes. An evaluation looking only at the number of persons changing modes would overlook part of the project's efforts.

The second problem with using such a measure to evaluate the demonstration is that there is no way by which one can calculate the number of carpools formed. Such a question was not included in the survey instrument. Further it is doubtful whether it could be calculated given the somewhat erratic nature of non-work trips. A far more useful and measurable factor is the change in mode use at the neighborhood level.

Further, the extent to which respondents were helped exclusively by the demonstration is not known. As discussed in Section 4.4.1, it is difficult to isolate the impact of other Lincoln Carpool/Vanpool program promotional campaigns on people's sense of being influenced to change their travel behavior.

There is another problem in that the sample of persons who said they were assisted is very small. In the demonstration neighborhoods, 62 respondents stated they were helped, while 28 respondents in the control group stated they were helped. It is rather difficult to draw any significant findings from so small a sample.

Table 4-5 below presents the percentage of trips made, for all purposes, by carpool and alternate modes in the control and demonstration neighborhoods, tabulated by whether or not respondents felt that they had been assisted.

TABLE 4-5. CARPOOL AND ALTERNATIVE MODE SPLITS FOR ALL TRIPS BY NEIGHBORHOOD AND ASSISTANCE

	Assistance	
	Yes	No
Demonstration neighborhoods	63%	50%
Control neighborhoods	60%	49%

Comparing the data in Table 4-5 suggests that, among residents in the demonstration neighborhoods, there was a significantly greater amount of carpooling and alternate mode use by those who were helped than by those not helped. This difference is significant at the 90% level of confidence (t=1.83). However, among those in the control area, the difference in carpooling and alternate mode use is great but not significant (t=1.02). This may be due to the small sample for these residents.

These comparisons suggest that, for all trip purposes, the project may have had some positive impact in the project neighborhood among those who stated that they were assisted. This conclusion is somewhat tempered by the fact that an equal portion of those helped in the control neighborhoods as in the demonstration area carpool and use other alternative means. This suggests that the amount of carpooling taking place in Lincoln may be due to factors other than the demonstration project. However, without pre- and post-project mode split data for both the test and control groups, we cannot conclusively state whether the project had its intended impact.

4.4.6 Pre- and Post-Project Carpool Mode Splits

Was there more carpooling in the demonstration neighborhoods after the project than before the project?

If carpooling and alternate mode use increased in the demonstration neighborhoods between the time the project started and finished, we would suspect that the demonstration might have been partially effective.

Because of the data limitations, we can only conduct a before and after comparison with respect to work trips. Since there were no residents in Fairfield Park prior to the demonstration, this analysis must also be limited to Bethany and Colonial Hills. Table 4-6 compares the before and after carpool mode splits for these two neighborhoods. (We cannot compare alternate mode use because of differences in

definitions of this term for prior and post demonstration data).

TABLE 4-6. PRE- AND POST-PROJECT CARPOOL MODE SPLITS BY NEIGHBORHOOD (Home-work trips)

	Pre-project[a]	Post-project[b]
Bethany	26%	28%
Colonial Hills	22%	26%

[a]From project canvassing survey; n=473 for Bethany, n=464 for Colonial Hills.

[b]Follow-up and random evaluation surveys; n=256 for Bethany, n=259 for Colonial Hills.

In both neighborhoods, the apparent trend is towards slightly more carpooling after the project than before. Such a trend would suggest that the Lincoln project might have had some positive impact and that it was successful in these two neighborhoods for at least the home-work trips. However, neither increase is statistically very significant with sample sizes used.* Moreover, without any trend data for the rest of Lincoln, we do not know whether these results were due to the demonstration or to exogenous factors.

4.5 PROJECT EFFECTIVENESS

It was not possible to conduct a valid or useful cost effectiveness study for this project because there was no readily available measure of the project's benefit. For example, it was not possible to determine the number of carpools formed or the number of new transit patrons resulting from the project.

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*Probability of no increase is about 0.3 for Bethany and about 0.1 for Colonial Hills using a one-tailed test.

5.0 SUMMARY AND TRANSFERABLE IMPLICATIONS

5.1 CONCLUSIONS OF PROGRAM EFFECTIVENESS EVALUATION

The evaluation examined six related issues to determine whether the Lincoln project was effective in meeting its goals. The highlights of this evaluation include the following:

- The project did not help significantly more people in the demonstration neighborhoods than were helped in the rest of Lincoln by the project and other ride-sharing services.
- The demonstration may have contributed to a greater amount of carpooling and other mode use in the project neighborhoods than in the rest of Lincoln.
- Carpooling and alternate mode use, compared to the control area, was measurably higher in only one of the three demonstration neighborhoods.
- Home-work commuting by carpool in Bethany and Colonial Hills increased only slightly if at all between the time the project started and the time it concluded.
- Personalized services in the form of face-to-face visits by ridesharing advocates neither helped respondents nor resulted in more alternative mode use.
- While carpooling was more prevalent among those who were helped than those not, it is uncertain whether this is a result of the demonstration or due to the fact that those carpooling might be more likely to say they were helped.

Based on these findings, one cannot state that the demonstration led directly to an increase in carpooling and other alternative mode use overall in all three of the project neighborhoods. While there is some evidence to suggest that the demonstration assisted people, it did not necessarily result in increasing the share of clients' trips made by carpools or other alternative modes.

With respect to changes in particular neighborhoods, the evaluation results indicate that the project had some impact on carpooling and alternate mode use in one of the three neighborhoods, Colonial Hills. The evaluation further suggests that there was some increase in carpooling for school trips.

These results suggest that under certain circumstances and in particular neighborhoods home-end ridesharing services might be effective. The Lincoln demonstration showed a positive impact in Colonial Hills, where residents were already concerned about travel and where there were perceived travel problems.

There was also a positive change in use of alternative modes for school trips. This may be due to the special attention given by the project to school trips. The project conducted special promotional activities aimed at student commuting and provided specific matching services for demonstration neighborhood residents with school-age children. Another likely reason for this positive impact was that school trips tend to be more regular and scheduled than other non-work trips. Therefore, they may be easier trips to match for carpools.

While the evaluation indicated that the visits by ridesharing agents were regarded as helpful, they were not found to lead to more carpooling. Based on the information available, we do not know whether this was due to the ineffectiveness of the concept itself or to problems with the agents or their training or deployment. The evaluation did not assess the quality of the ridesharing agents' work or how well the project utilized them. Therefore, one should not conclude from the Lincoln experience that the concept of neighborhood ridesharing advocates is an ineffective one.

5.2 TRANSFERABLE IMPLICATIONS

What has been learned in the Lincoln experiment that may be useful to others involved with home-end ridesharing projects? Based on this evaluation, there are points which may be transferable to other similar projects.

The first step in any ridesharing and other alternate mode use program involves the creating of awareness. People need to be made aware of the disadvantages of driving alone and the advantages of carpooling, using transit, etc. Once this awareness is created, it then becomes possible to promote ridesharing and to begin assisting people to find suitable alternatives.

In Lincoln it was found easier to create this awareness in some neighborhoods than in others. This difference contributed to varying degrees of success among the target areas. For instance, the project had a more direct impact in Colonial Hills partially because it was relatively isolated and there were concerns about safety in accessing services by crossing heavily travelled streets.

The Lincoln project experience suggests a strategy for creating awareness and promoting ridesharing by developing action plans at the neighborhood level. These action plans, built upon travel conditions and people's needs, are used to strategize how residents in cohesive areas can be persuaded to use alternative modes of travel.

Also, strategic use of media is critical for informing people of the availability of the project's services. In Lincoln, few people remembered the visits from the agents, and even fewer cited them as important to their decision whether to rideshare more often. More people remembered television ads than any other media campaign. While this may be due to the overall pervasiveness of television, it should not be discounted. Frequent and long-term campaigns over television are likely to be well remembered. The problem is, of course, that

television time (unless public service announcements are used) is expensive.

Finally, the use of neighborhood ridesharing agents needs to be refined. In Lincoln, the agents had little positive impact on getting people to use alternative modes more frequently. As discussed earlier, it is impossible to tell if this was due to a bad concept or poor training and use of the agents. Other agencies contemplating the use of a similar tactic are well advised to carefully select and train their personnel. Lincoln found that housewives living in the target neighborhoods were more reliable and efficient than student interns. (Even then the results were not very significant.) Housewives also found it easier to gain entry to people's homes. However, we do not know whether they conveyed their message well or even whether they contacted the right people. It is essential that any future use of such advocates be carefully planned for in terms of whom they are to contact, when, and with what message. It is only with more experience that their utility can be adequately assessed.

APPENDIX A

CANVASSING AND EVALUATION SURVEYS

Neighborhood Travel Options

The main purpose of this neighborhood study is to build upon Lincoln's existing transportation services such as the bus system, streets, bike routes, sidewalks and computer carpool matching to save fuel energy and money.

address
How long lived here?

1. less than 1 year
2. 1-3 years
3. 3-10 years
4. over 10 years

Vehicles	No.
auto	
pickup	
van	
motorcycle	
bicycle	
rec. veh.	

Individual age codes
1. 0-18 specific
2. 19-25
3. 26-34
4. 35-49
5. 50-64
6. 65 & older

Occupation codes
1. prof./tech.
2. managerial
3. sales/retail
4. clerical
5. craft/operative
6. service/labor
7. other (specify)

	Person A LD	Person B LD	Person C LD	Person D LD	
	Age ___ Sex ___ Occupation___	Age ___ Sex ___ Occupation___	Age ___ Sex ___ Occupation___	Age ___ Sex ___ Occupation___	
	intersection	intersection	intersection	intersection	Home TO WORK where
HOME TO WORK	DA Bus CP B Mo W O	DA Bus CP B Mo W O	DA Bus CP B Mo W O	DA Bus CP B Mo W O	Travel Mode
	___ to ___	___ to ___	___ to ___	___ to ___	% in all modes / no. in carpool / usual hours
	S M T W Th F S	S M T W Th F S	S M T W Th F S	S M T W Th F S	days
WORK TRIP	DA Bus CP B Mo W O	DA Bus CP B Mo W O	DA Bus CP B Mo W O	DA Bus CP B Mo W O	Work to HOME Travel Mode
					% in all modes / no. in carpool
	S M T W Th F S	S M T W Th F S	S M T W Th F S	S M T W Th F S	days
					stops enroute
					1. School
					2. Grocery
					3. Shopping
					4. Church
					5. Medical
					6. Lesson
					7. Recreation
					Combination

Interviewer's Marginal Notes

Are there places your family would like to go but lack transportation?

Trip Purpose	Destination	Time	Nature of conflict

Does anyone in your family require special assistance? ___yes___no
reason _____
kind of assistance? _____

On what trips would you be willing to use:
bicycling _____
carpooling _____
riding bus _____
walking _____
taxis _____
special carriers
such as church van or bus _____
_____

Are there reasons you would not use one of the alternatives to driving alone if it could be arranged?

_____
_____
_____
_____

In your family--
would you say transportation is

a great concern	A B C D
of some concern	A B C D
of very little concern	A B C D
of no concern	A B C D
don't know	A B C D

What is your greatest concern regarding transportation?

_____
_____

Why is there little concern for tranportation in your situation?

_____
_____

What would have to happen before you would become concerned about transportation?

_____
_____

Name: _____

Address: _____

Phone #: _____

Interviewer Initials: _____

Call Record Sheet # _____

Questionnaire (1)-(4)

D E M
(5)-(7)

Neighborhood: Bethany.....1 (8)
Colonial Hills.....2
Fairfield Park.....3
Rest Of Lincoln.....4
~~Fairfield Park/In Person.....5~~

Follow-up/Random: Follow-up.....F (9)
Random.....R
Follow-up/Don't Recall.....D

INTRODUCTION - FOLLOW-UP TO NEIGHBORHOOD CANVASSING WHERE NAME IS KNOWN.

Hello, may I speak to _____? (If person not there, find time to call back and record on call sheet.) (Once person on phone, ask:) Is this _____? My name is _____ and I'm with WRA, an independent research company. I am following up an interview that you had with a neighborhood ridesharing agent about transportation in the last two years. We are conducting a study with people in the Lincoln area to see how to improve transportation services. Your replies will be totally confidential and will be very helpful to us.

1. Do you live at _____?

(Skip to Part A on bottom of page 2)---------Yes
(Thank & Terminate)----------No

INTRODUCTION -- RANDOM OR REVERSE DIRECTORY CALLS

Hello, my name is _____ and I'm with WRA, an independent research company. We are conducting a study with people in the Lincoln area to see how to improve transportation services. Your replies will be totally confidential and will be very helpful to us.

(If address known, ask Q#2. If address not known, skip to Q#3.)

2. First, do you live at _____?

(Skip to Q#4)----------Yes
(Ask Q#3)----------No

3. Would you tell me your nearest street intersection so that we can tell if our sample is drawn from the correct area?

_____ and _____

(Compare intersection with neighborhood maps and street listings to determine if residence is in correct sample area for Bethany, Colonial Hills, and Fairfield Park. If so, go to Q#4. If not, thank and terminate interview.)

ASK Q#4 - REGULAR VERSION 50% OF TIME
ASK Q#4 - NON-WORKING VERSION 50% OF TIME

Maximum value

Q#4 - REGULAR VERSION

4. Now I need to ask you two questions to determine who to talk to in your household. — R (10)

4A. How many persons 16 years old or older live in your household? _____ — 01-99 (11-12)

4B. How many of these are male? _____ — 00-99 (13-14)

(Determine respondent through use of the respondent selection grid, rotating through the six versions and coding the version used at the right. If you are not already talking to the right person, arrange to get them on the phone, offering to call back if necessary. For call backs, record name and time to call back below as well as noting when to call on the call record sheet.) — (Grid)....1 (15); ....2; ....3; ....4; 5; 6

Respondent Name For Call Back: _____

Time To Call Back (Day and Hour): _____

Used second introduction if get new person on the phone, then go on to Part A below.

Q#4 - NON-WORKING VERSION

4. Now I need to ask you two questions to determine who to talk to in your household. — N (10)

4A. How many persons 16 years old or older who do not work are living in your household? _____ — 01-99 (11-12)

4B. How many of these are male? _____ — 00-99 (13-14)

(Determine the non-working respondent through use of the respondent selection grid applied to only the non-working members of the household. Rotate through the six grid versions and code the version used at the right.) — (Grid)....1 (15); ....2; ....3; ....4; 5; 6

(If there are not non-working members of the household, terminate.)

(If you are not already talking to the right person, arrange to get them on the phone, offering to call back if necessary. For call backs, record the name and time to call back below as well as noting when to call on the call record sheet.)

Respondent Name For Call Back: _____

Time To Call Back (Day and Hour): _____

Use second form of introduction if get new person on the phone, then go on to Part A below.

PART A

1. Now, I would like to ask you about the trips that you made in the last 24 hours. Thinking back to yesterday at (give current time and AM or PM), have you made any trips between that time and now?

(Record trips on diary sheets, using as many as necessary. Then go to Part B. Staple trip diary sheets to survey form when interview is completed.) — Yes....1 (16); No....2

---

1. Do you have any school age children?

(Ask Q#1A)----------Yes.....1 (17)
(Skip to Part C)----------No.....2 → IF "2" leave C18-C31 blank

1A. How many school age children do you have?

(List #:)_____ 1-9 (18)

2. When school was in session, did you or another member of your household drive your child(ren) to or from school? (open-ended)

(Ask Q#2A)----------Yes.....1 (19)
(Skip to Q#4)----------No.....2 → C20-C24 blank

2A. How many days per week (insert A-B):

A. To school? (List # days/week to school) _____ 0-9 (20)

B. From school? (List # days/week from school) _____ 0-9 (21)

3. Did you or another member of your household also drive other people's children to or from school?

(Ask Q#3A)----------Yes.....1 (22)
(Skip to Q#4)----------No.....2 → C23-24 blank

3A. How was the arrangement made? (open-ended - do not read responses)

Informal contact with neighbors.....01 (23-24)
Informal contact at church or school.....02
Match List from Lincoln's Carpool/Vanpool.....03
Other (Specify)_____.....04

4. Did other people drive your child(ren) to or from school?

(Ask Q#4A)----------Yes.....1 (25)
(Skip to Q#5)----------No.....2 → C26-27 blank

4A. How was the arrangement made? (open-ended - do not read responses)

Informal contact with neighbors.....01 (26-27)
Informal contact at church or school.....02
Match List from Lincoln's Carpool/Vanpool.....03
Other (Specify)_____.....04
Family.....05
Friends.....06

5. Are there places other than school to which your child(ren) need to be driven?

(Ask Q#6)----------Yes.....1 (28)
(Skip to PART C)----------No.....2 → C29-31 blank

6. Have you established any carpool arrangements for taking your children to or from these places?

(Ask Q#6A)----------Yes.....1 (29)
(Skip to PART C)----------No.....2 → C30-31 blank

6A. How was the arrangement made? (open-ended - do not read responses)

Informal contact with neighbors.....01 (30-31)
Informal contact at church or school.....02
Other (Specify)_____.....03
Friends.....04
Other organizations.....05

PART C

1. Have you received or seen any of the following materials? (read A-J)

		Received Or Seen		Helped Or Influenced		
		Yes	No	Yes	No	
1	A. Newspaper stories about the neighborhood ridesharing demonstration:	1	2	1	2	1-2 (32) (33)
2	B. TV advertisement promoting carpooling:	1	2	1	2	(34) (35)
3	C. TV advertisement promoting bus riding:	1	2	1	2	(36) (37)
4	D. A visit from a neighborhood ridesharing agent with transportation information:	1	2	1	2	(38) (39)
5	E. Information on carpooling left on your doorknob:	1	2	1	2	(40) (41)
6	F. Information on the Christmas shopper shuttle left on your doorknob:	1	2	1	2	(42) (43)
7	G. Christmss shopper shuttle signs:	1	2	1	2	(44) (45)
8	H. School/pool carpool enrollment form(s):	1	2	1	2	(46) (47)
9	I. Ridesharing matchlist:	1	2	1	2	(48) (49)
10	J. Any other information concerning carpooling: (If yes, specify) _____	1	2	1	2	(50) 1-2 (51)
11	K. ~~Information on the neighborhood ridesharing demonstration~~	1	2	1	2	Code in C65 & 66 on Pg 5.

If "2" in first Column - 2nd is blank

2. Have any of these materials helped or influenced you to make more of your trips by carpooling, riding the bus, bicycling, or walking?

(Ask Q#2A)----------Yes.....1 (52)
(Skip to Q#3)----------No.....2

2nd Col in above Series is blank for all.

2A. Which ones? (If necessary, ask:) What about (read those items coded "1" above)? (Code as "1" or "2" under "Helped or Influenced" in Q#1)

3. How long have you lived in your current neighborhood?

Less than six months.....1 (53)
Six months - two years.....2
Three - four years.....3
Five years or more.....4

4. How long have you lived in ~~your~~ the Lincoln area?

Less than six months.....1 (54)
Six months - two years.....2
Three - four years.....3
Five years or more.....4

5. (If person has been driving on trips, code as "1"; otherwise, ask:) Do you have a valid driver's license?

Yes.....1 (55)
No.....2

6. How many persons in your household, including yourself, have a valid driver's license?

   (List #:) _____ 0-9 (56)

7. How many cars, vans, or pickup trucks not including motorcycles in operating condition are available for use by members of your household?

   (List #:) _____ (57)

8. Including yourself, how many persons are there in your household?

   (List #:) _____ (58)

9. How many are employed?

   (List #:) _____ 0-9 (59)

   ↓ If "0" - code blank

10. (If anyone employed, ask:)
    Does any member of your household carpool to work?

    (Ask Q#10A)----------Yes. (60)
    (Skip to Q#11)----------No.
    ↳ If no code "0" 0-9

10A. How many persons?

    (List #:) _____

    (If employed, ask:)

11. What is your occupation? (List:) _____

    Salesperson.....1 (61)
    Clerical/office worker.....2
    Shop/production worker.....3
    Craftsman or foreman.....4
    Service worker.....5
    Professional/technical.....6
    Manager/administrator.....7
    Other (Specify)_____.....8

    Leave blank for non-working spouse or if person is not employed.

12. Is the total household income for all individuals in your household under or over $15,000?

    (If "under" $15,000, ask:) Under or over $10,000? (Record)
    (If "over" $15,000, ask:) Under or over $25,000? (Record If Under)
    (If "over" $25,000, ask:) Under or over $35,000? (Record)

    not followed due erroneous change in Q.11

    (Thank Respondent & Terminate)
    ---------Under $10,000.....1 (62)
    -----$10,000 - $14,999.....2
    -----$15,000 - $24,999.....3
    -----$25,000 - $34,999.....4
    ------$35,000 or over.....5

    Time Finished ___ : ___ AM/PM

    Time Started ___ : ___ AM/PM

    Total Minutes 01-99 (63)(64)

    (Please staple trip diary pages to the back of this form at the end of the interview.)

    1-2 (65)
    1-2 (66)

Trip Diary (PART A)

(Complete 1 Trip Diary for each trip-first trip would be 6/01, next 7/02, etc.).

Questionnaire #: _____ (1)-(4)

Page & Trip #: 1 T (5) 01 (6) 55 (7)

A. Where did your first/next trip begin? (Check place or purpose for place)

Work	.01 (8-9)
School	.02
Shop-Groceries	.03
Shop-Other	.04
Church	.05
Personal Business	.06
Rec-Social	.07
Home	.08
Other (Specify) _____	.09
Other person's place of work	.10
Vacation / Out of town	.11

B. Where did you go on this trip?

Work	.01 (10-11)
School	.02
Shop-Groceries	.03
Shop-Other	.04
Church	.05
Personal Business	.06
Rec-Social	.07
Home	.08
Other (Specify) _____	.09
Other person's place of work	.10
Vacation / Out of town	.11

C. By what means did you travel? (If car, truck, van, etc., ask if they drove or rode along with others.)

(Ask Q#C-1)	Drove	.01 (12-13)
(Skip to Q#C-2)	Rode With Others	.02 → C14 blank
(Skip to Q#F)	Reg. Bus	.03
	School Bus	.04
	Motorcycle	.05
	Taxi	.06
	Bike	.07
	Walk	.08
	Other (Specify) _____	.09

→ C14-21 blank

C-1 Did you have any passengers in the car with you?

(Skip to Q#D)	Yes	1 (14)
(Skip to Q#F)	No	2 → C15-21 blank

→ C15 blank

C-2 Was there an automobile available for you to drive for this trip?

Yes	1 (15)
No	2

D. Of the persons who made this trip with you, how many were (insert A-D)?

(Ask Q#E if at least one in car. If none, skip to Q#F)

A.	Family members under 16: _____	0-9 (16)
B.	Family members 16 or over: _____	(17)
C.	Other persons under 16: _____	(18)
D.	Other persons 16 or over: _____	0-9 (19)
	TOTAL: _____	

Check Total: So there were (read total) persons other than youself?

E. (Ask Q#E if "Other Persons" in Q#D.) (If "Family Members", skip to Q#F.)
How were arrangements made? (Open-ended - do not read responses)

Informal contact with neighbors.....01 (20-21)
Informal contact at school.....02
Match list from Lincoln's Carpool/Vanpool.....03
Match list from church.....04
Other (Specify)_____.....05
Contact at work..06
Other organizations..07
Friends..08

F. How frequently do you make this same trip? Is is (responses read)?

Daily	Several Days A Week	Once A Week	Less Than Once A Week
1	2	3	4

1-4 (22)

G. How long have you been making this trip by (read response from Q#C)?

One Year Or Less	One-Two Years	Over Two Years	Other (explain)
1	2	3	4

1-4 (23)

Repeat questions A-F for additional trips on additional sheets as necessary.
Then go to Part B on page 3.

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